builders have any chance of competing. Indirectly it may be fairly con-
tended that this is to some extent the result of English Board of Trade
rules for railway bridges. The rules, as they now stand, are not only per-
fectly useless for securing safety, but they indirectly put a premium on
bad materials. This, taken with the fact that a Board of Trade inspection
of a bridge must remain a farce so long as these rules are in force, places
the public safety completely in the hands of the bridge engineer or of the
resident engineer or inspector representing the engineer on the work. A
bridge that would be passed by the English Board of Trade would require
strengthening 5 per cent. in some parts and 60 per cent. in others before
it would be passed either by the German Government or by the leading
bridge building companies in America, and yet it is known that most of
the German or American bridges have a lighter appearance than our
own.”*

“There is no reason, except honesty, for putting good material into a
bridge, and unscrupulous men will say common material is good enough
when anything will pass the Board of Trade. There is no doubt that this
feeling actsuates bridge building to a considerable extent; it encourages the
continuation of unsatisfactory design and workmanship, and a result of
years of working under this rule is that a system has grown up which it
will not be easy to leave, and a disinclination to any but the good-enough
policy is sufficiently widespread to make it really difficult for any engineer
to get bridges built which are out of the ordinary run.”*

“In one recent case, which is typical of many, an engineer had designed
bridges at considerable trouble, but, to suit the custom of the bridge
makers’ trade, he had to submit to an increase in weight, which changed
his bridges from economical to ordinary bridges in this respect. He also
endeavoured to work more on the German system of using lattice girders
under 100 feet span, as well as above that; but the difficulty of getting
light lattice girders built with sufficient care, instead of with that rough-
hedge carpentering in iron which is about the quality of most plate girder
work, was so great that he had to give it up, and return to the heavy ugl-
iness of the plate girder. He had tried to get larger bridge girders made
without plate work, and with greater depth, necessitating long tension bars,
but the difficulty which has been experienced in getting these long bars
made sufficiently accurately to length, so that one might not be sagging
while its neighbour was being stretched under undue load, is so great that
he will have to give up the attempt unless he makes his sections much
heavier than is necessary except to cover bad workmanship. Now, this
sort of thing is a daily-acted fact, but the chief American and Canadian
bridge builders are accustomed to make lighter bridges, and there is no
finer work done in the world than that they turn out at the pre-

csent time.”*

* * * * * * * Hundreds of bridges have been made during
the past few years for Canada, and we have made hardly any, if any of
them, although much of the material has gone from our shores, and paid
as high a duty as it would have paid if our men had been paid the money
to work it up into bridge forms. We lose trade in all directions by the
stubbornness and inertia of our manufacturers, and it will probably be a